

- f. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the SIU's. The summary shall include:
 - i. The names and addresses of the SIU's subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
 - ii. The conclusions or results from the inspection or sampling of each industrial user.
- g. The Discharger shall characterize the compliance status of each SIU by providing a list or table that includes the following information:
 - i. Name of SIU;
 - ii. Category, if subject to federal categorical standards;
 - iii. The type of wastewater treatment or control processes in place;
 - iv. The number of samples taken by the POTW during the year;
 - v. The number of samples taken by the SIU during the year;
 - vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;
 - vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits;
 - viii. Whether the facility is in significant non-compliance (SNC) as defined at 40 C.F.R. section 403.8(f)(2)(viii) at any time during the year;
 - ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action (e.g., warning letters or notices of violation, administrative orders, civil actions, and criminal actions), final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;
 - x. Restriction of flow to the POTW; and
 - xi. Disconnection from discharge to the POTW.
- h. A brief description of any programs the POTW implements to reduce pollutants from non-domestic users that are not classified as SIU's;
- i. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning: the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;
- j. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and
- k. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 C.F.R. section 403.8(f)(2)(viii).

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Pretreatment Program reports shall be submitted electronically to the Central Valley Water Board via CIWQS submittal and the:

State Water Resources Control Board
NPDES Wastewater@waterboards.ca.gov
and the
U.S. EPA Region 9 Pretreatment Coordinator
R9Pretreatment@epa.gov

3. **Technical Report Submittals.** This Order includes requirements to submit a Report of Waste Discharge (ROWD), special study technical reports, progress reports, and other reports identified in the MRP (hereafter referred to collectively as “technical reports”). The Technical Reports Table below summarizes all technical reports required by this Order and the due dates for submittal. All technical reports shall be submitted electronically via CIWQS submittal. Technical reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment.

Table E-11. Technical Reports

| Report # | Technical Report | Due Date | CIWQS Report Name |
|---------------------------------|---|------------------|-------------------|
| Standard Reporting Requirements | | | |
| 1 | Report of Waste Discharge | 31 January 2023 | ROWD |
| 2 | Analytical Methods Report | 1 February 2019 | MRP IX.D.4 |
| 3 | Annual Operations Report | 1 February 2019 | MRP X.D.1 |
| 4 | | 1 February 2020 | MRP X.D.1 |
| 5 | | 1 February 2021 | MRP X.D.1 |
| 6 | | 1 February 2022 | MRP X.D.1 |
| 7 | | 1 February 2023 | MRP X.D.1 |
| Other Reports | | | |
| 8 | Salinity Evaluation and Minimization Plan | 31 January 2023 | WDR VI.C.3.a |
| 9 | Annual Pretreatment Reports | 28 February 2019 | MRP X.D.2 |
| 10 | | 28 February 2020 | MRP X.D.2 |
| 11 | | 28 February 2021 | MRP X.D.2 |
| 12 | | 28 February 2022 | MRP X.D.2 |
| 13 | | 28 February 2023 | MRP X.D.2 |
| 14 | WER Verification Study Report | 1 February 2021 | VI.C.2.b |
| 15 | WER Update (if necessary) | 31 January 2023 | VI.C.2.c |

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ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II.B of this Order, the Central Valley Water Board incorporates this Fact Sheet as findings of the Central Valley Water Board supporting the issuance of this Order. This Fact Sheet discusses the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

| | |
|---|---|
| WDID | 5A31NP00011 |
| CIWQS Facility Place ID | 238365 |
| Discharger | City of Lincoln |
| Name of Facility | Wastewater Treatment and Reclamation Facility |
| Facility Address | 1245 Fiddymont Road |
| | Lincoln, CA 95648 |
| | Placer County |
| Facility Contact, Title and Phone | Gary Hengst, Chief Plant Operator, (916) 434-5062 |
| Authorized Person to Sign and Submit Reports | Jennifer Hanson, Public Services Director, (916) 434-3248 |
| Mailing Address | 600 Sixth Street, Lincoln, CA 95648 |
| Billing Address | Same as Mailing Address |
| Type of Facility | Publicly Owned Treatment Works (POTW) |
| Major or Minor Facility | Major |
| Threat to Water Quality | 1 |
| Complexity | A |
| Pretreatment Program | Yes |
| Recycling Requirements | Recycling regulated under Master Reclamation Permit R5-2005-0040-01 (as amended by Order R5-2012-0052) |
| Facility Permitted Flow | Existing Plant: 5.9 million gallons per day (MGD), average dry weather flow Phase 1 Expanded Plant: 7.1 MGD, average dry weather flow Phase 2 Expanded Plant: 8.0 MGD, average dry weather flow Expanded Plant: Up to 8.4 MGD, average dry weather flow |
| Facility Design Flow | Existing Plant: 5.9 MGD, average dry weather flow Phase 1 Expanded Plant: 7.1 MGD, average dry weather flow Phase 2 Expanded Plant: 8.0 MGD, average dry weather flow Expanded Plant: Up to 8.4 MGD, average dry weather flow Maximum hydraulic capacity at outfall: 25 MGD, as a daily average |
| Watershed | Lower Sacramento |
| Receiving Water | Auburn Ravine Creek |
| Receiving Water Type | Inland Surface Water |

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- A. The City of Lincoln (hereinafter Discharger) is the owner and operator of the City of Lincoln Wastewater Treatment and Reclamation Facility (hereinafter Facility), a POTW. Stantec Consulting is the contract operator of the Facility.

For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

- B. The Facility discharges wastewater to Auburn Ravine Creek, a water of the United States and tributary of the Sacramento River, via East Side Canal and Natomas Cross Canal, within the Lower Sacramento watershed. The Discharger was previously regulated by Order R5-2014-0007 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0084476 adopted on 7 February 2014 with an expiration date of 1 February 2019. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.
- C. When applicable, state law requires dischargers to file a petition with the State Water Resources Control Board (State Water Board), Division of Water Rights and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce any applicable requirements under Water Code section 1211. This is not an NPDES permit requirement.
- D. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its waste discharge requirements (WDR's) and NPDES permit on 17 July 2018. The application was deemed complete on 17 July 2018. A site visit was conducted on 7 June 2018 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.
- E. Regulations at 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed 5 years. Accordingly, Table 3 of this Order limits the duration of the discharge authorization. Under 40 C.F.R. section 122.6(d), states authorized to administer the NPDES program may administratively continue state-issued permits beyond their expiration dates until the effective date of the new permits, if state law allows it. Pursuant to California Code of Regulations (CCR), Title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all federal NPDES requirements for continuation of expired permits.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for a population of approximately 66,000; with 46,000 in the City of Lincoln and 20,000 in western Placer County. The Facility's current design average dry weather flow capacity for tertiary treated wastewater is 5.9 MGD, with plans to expand the capacity to 7.1 MGD in Phase 1 and to 8.0 MGD in Phase 2.

A. Description of Wastewater and Biosolids Treatment and Controls

1. Facility Treatment Processes.

I. Required Processes

- Influent flow meter
- Screening;
- Biological treatment within oxidation ditches that include nitrification and denitrification;
- Secondary clarification; three secondary clarifiers;
- Chemical coagulation and rapid mix flocculation;

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- Granular medium filtration; and
- Disinfection with ultraviolet (UV) light.

b. Auxiliary Processes

- Maturation ponds to equalize flow and effluent quality;
- Dissolved air flotation (DAF) to remove algae that grows in the maturation ponds;
- Emergency Storage Basin with a compacted clay liner and an HDPE liner, capable of holding approximately 79 million gallons, is provided to hold all effluent that does not meet discharge requirements;
- Two existing and a third proposed Tertiary Storage Basin (TSB - capacity of 90 MG each). One existing TSB is fully lined and the other is partially lined with HDPE. The proposed TSB will be fully lined with HDPE.

2. Biosolids Treatment and Disposal

- Sludge is dewatered using a centrifuge.
- Dried sludge is hauled to a landfill.
- The Facility produces approximately 1,106 dry metric tons of biosolids, annually. Transportation and disposal/reuse of the biosolids are regulated by U.S. EPA under 40 C.F.R. part 503.

3. Groundwater Monitoring Network

- Five Groundwater Monitoring Wells are located on site (MW-1, MW-2, MW-3, MW-4, and MW-5).
- Groundwater monitoring of the WWTRF is required under Master Reclamation Permit R5-2005-0040-01 for the City of Lincoln.

4. Tertiary treated effluent is either discharged to Auburn Ravine Creek at Discharge Point 001 or to on-site and off-site reclamation areas (regulated by WDR Order R5-2005-0041-01). The Discharger has the ability to divert tertiary treated effluent to the tertiary storage basins to store recycled water, store final effluent during downstream flood events, and/or store effluent that does not meet requirements of this Order (e.g., receiving water temperature limits). Because the Facility is able to temporarily store tertiary treated effluent and discharge it at a later date, there are times when no discharge to Auburn Ravine Creek at Discharge Point 001 is occurring and there are times when the discharge to Auburn Ravine Creek exceeds the regulated flow capacity of the treatment works (e.g., flow is being discharged directly from the treatment process and stored, treated effluent is being discharged from the tertiary storage basins). The outfall at Discharge Point 001 currently possesses a maximum hydraulic capacity of 25 MGD, as a daily average.

During the term of Order R5-2014-0007, the Discharger completed a Facility expansion project, which increased the design average dry weather flow capacity from 4.2 MGD to 5.9 MGD and the outfall capacity at Discharge Point 001 from 13 MGD to 19 MGD in order to accommodate regionalization with the Placer County Sewer Maintenance District 1 (SMD1) Wastewater Treatment Plant (WWTP). The plant capacity was increased through the addition of the following units:

- a. Two influent pumps and additional headworks improvements;
- b. One anoxic basin and oxidation ditch complex;
- c. Two secondary clarifiers;

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- d. Modifications to the maturation ponds' effluent structures;
 - e. Two filter cells; and
 - f. Effluent pumping station improvements.
5. Order R5-2014-0007 erroneously used an average daily discharge flow of 12.2 MGD for calculation of mass limitations for BOD₅, TSS, and ammonia. Because the antidegradation analysis assessed the impacts of a maximum discharge of 8.4 MGD ADWF, mass limitations should have been based on 8.4 MGD.
 6. The Facility is preparing for a capacity expansion to accommodate planned growth at the Bickford Ranch housing subdivision estimated to be completed by 2020.
 - Current design flow is 5.9 MGD.
 - Phase 1 expansion to 7.1 MGD to be completed in 2020.
 - Phase 2 expansion to 8.0 MGD may occur during this permit term.
 - Antidegradation Analysis has been completed up to 8.4 MGD.

The design flow of the facility is determined by the flow limitations of the required treatment processes. Due to the configuration of the facility and the ability to store and reintroduce water from various locations throughout the facility, the discharge flow is variable and does not represent the average dry weather flow to measure against the flow capacity of the necessary treatment processes. Effluent limitations are dependent on the proper operation of the required treatment processes. The influent flow to the plant must, therefore, be limited by the design flow of the required treatment processes. Therefore, average dry weather design flow discharge prohibitions (Waste Discharge Requirements section III.F. 1 through 4) are all measured at the influent monitoring location INF-001.

B. Discharge Points and Receiving Waters

1. The Facility is located in Sections 29 and 30, T11N, R6E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point 001 to Auburn Ravine Creek, a water of the United States and tributary of the Sacramento River, via East Side Canal and Natomas Cross Canal, at a point latitude 38° 52' 05" N and longitude 121° 21' 28" W.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

1. Effluent limitations contained in Order R5-2014-0007 for discharges from the Filter Clearwell Internal Waste Stream Compliance Point (Monitoring Location INT-001) and representative monitoring data from the term of Order R5-2014-0007 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data – Filter Clearwell Internal Waste Stream Compliance Point

| Parameter | Units | Effluent Limitation | | | Monitoring Data (January 2015 – December 2017) | | |
|-----------|------------------|---------------------|----------------|------------------|---|----------------------------------|-------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Flow | MGD ¹ | -- | -- | 4.2 ² | -- | -- | NR |
| | MGD ³ | -- | -- | 5.9 ² | -- | -- | NR |
| | MGD ⁴ | -- | -- | 8.4 ² | -- | -- | -- |

| Parameter | Units | Effluent Limitation | | | Monitoring Data (January 2015 – December 2017) | | |
|--|------------|---------------------|-------------------|------------------|---|---|-------------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Conventional Pollutants | | | | | | | |
| Biochemical Oxygen Demand (5-day @ 20°C) | mg/L | 10 | 15 | 20 | ND | ND | 5.1 |
| Total Suspended Solids | mg/L | 10 | 15 | 20 | 3.7 | 4.8 | 6.2 |
| Non-Conventional Pollutants | | | | | | | |
| Total Coliform Organisms | MPN/100 mL | 2.2 ⁵ | 23 ⁶ | 240 ⁷ | -- | -- | 4.0 |

NR – Not Reported

ND – Non-Detect

- ¹ Effluent flow limitation effective until completion of regionalization project with the Placer County SMD1 WWTP.
- ² Applied as an average dry weather flow effluent limitation.
- ³ Effluent flow limitation effective following completion of regionalization project with the Placer County SMD1 WWTP.
- ⁴ Effluent flow limitation effective upon Executive Officer approval of request for increase in permitted flow rate up to a maximum of 8.4 MGD to accommodate for future growth within the Discharger's service area and/or additional regionalization projects.
- ⁵ Applied as a 7-day median effluent limitation.
- ⁶ Not to be exceeded more than once in any 30-day period.
- ⁷ Applied as an instantaneous maximum effluent limitation.

2. Effluent limitations contained in Order R5-2014-0007 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2014-0007 are as follows:

Table F-3. Historic Effluent Limitations and Monitoring Data – Discharge Point 001

| Parameter | Units | Effluent Limitation | | | Monitoring Data (January 2015 – December 2017) | | |
|--|----------------------|---------------------|-------------------|-------------------|---|---|-------------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Flow | MGD | -- | -- | 12.2 ¹ | -- | -- | 11.3 ² |
| Conventional Pollutants | | | | | | | |
| Biochemical Oxygen Demand (5-day @ 20°C) | mg/L | 30 | 45 | 60 | ND | 3.0 | 5.0 |
| | lbs/day ³ | 3,050 | 4,580 | 6,100 | 145 | 188 | 242 |
| | % Removal | 85 | -- | -- | 99 ⁴ | -- | -- |
| pH | standard units | -- | -- | 6.5 – 8.5 | -- | -- | 6.72 – 8.32 |
| Total Suspended Solids | mg/L | 30 | 45 | 60 | 4.0 | 15 | 15 |
| | lbs/day ³ | 3,050 | 4,580 | 6,100 | 269 | 463 | 616 |
| | % Removal | 85 | -- | -- | 98 ⁴ | -- | -- |

| Parameter | Units | Effluent Limitation | | | Monitoring Data (January 2015 – December 2017) | | |
|-----------------------------|----------------------|---------------------|-------------------|----------------------------------|---|---|-------------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Priority Pollutants | | | | | | | |
| Mercury, Total Recoverable | lbs/month | 0.022 ⁵ | -- | -- | 0.000065 ⁶ | -- | -- |
| | lbs/month | 0.0234 ⁷ | -- | -- | 0.0030 ⁶ | -- | -- |
| Non-Conventional Pollutants | | | | | | | |
| Ammonia, Total (as N) | mg/L | 0.70 | -- | 2.1 | 0.153 | -- | 0.28 |
| | lbs/day ³ | 71 | -- | 214 | 8.309 | -- | 14.92 |
| Acute Toxicity | % Survival | -- | -- | 70 ⁸ /90 ⁹ | -- | -- | 100 ¹⁰ |
| Chronic Toxicity | TUc | -- | -- | 11 | -- | -- | -- |

ND – Non-Detect

NR – Not Reported

¹ Applied as an average dry weather flow effluent limitation.

² Represents the maximum observed daily discharge.

³ Based on an average daily discharge flow of 12.2 MGD.

⁴ Represents the minimum reported percent removal.

⁵ Mass loading effluent limitation effective until completion of regionalization project with the Placer County SMD1 WWTP.

⁶ Represents the maximum total calendar annual mass load.

⁷ Mass loading effluent limitation effective following completion of regionalization project with the Placer County SMD1 WWTP.

⁸ Median percent survival of three consecutive acute bioassays.

⁹ Minimum percent survival for any one bioassay.

¹⁰ Represents the minimum observed percent survival.

¹¹ There shall be no chronic toxicity in the effluent.

D. Compliance Summary

1. The Central Valley Water Board issued Administrative and Civil Liability (ACL) Complaint R5-2016-0568 on 15 May 2017, which proposed to assess a civil liability of \$31,595 against the Discharger for violations resulting from the discharge of wastewater at a location or manner different from that described within the WDR's and failure to properly operate and maintain all facilities and systems of treatment and control to achieve compliance with the conditions of the WDR's, which occurred from the period 26 March 2016 through 27 March 2016 under Order R5-2014-0007. The Discharger paid the mandatory minimum penalty of \$31,595.
2. The Central Valley Water Board issued ACL Complaint R5-2017-0538 on 11 September 2017, which proposed to assess a civil liability of \$360,000 against the Discharger for violations resulting from the discharge of wastewater at a location or manner different from that described within the WDR's and failure to properly operate and maintain all facilities and systems of treatment and control to achieve compliance with the conditions of the WDR's, which occurred from the period 26 October 2016 through 5 November 2016 under Order R5-2014-0007. The Discharger paid the mandatory minimum penalty of \$360,000.

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E. Planned Changes

The Discharger is in the process of completing a phased expansion project to increase the Facility's treatment capacity from an average dry weather flow of 5.9 MGD to an average dry weather flow of 8.0 MGD in order to accommodate for planned growth and the associated increase in wastewater flows within the Bickford Ranch housing subdivision. Phase 1, which is planned for completion in 2020, provides for an increase in the average dry weather treatment capacity from 5.9 MGD to 7.1 MGD. Phase 2, which may be completed during the term of this Order, provides for an increase in the average dry weather treatment capacity from 7.1 MGD to 8.0 MGD. In order to accommodate local growth and regionalization, the Discharger submitted an Antidegradation Analysis with the ROWD for Order R5-2008-0156 requesting an increase in the permitted average dry weather flow up to 8.4 MGD. Therefore, an increase in the permitted average dry weather discharge flow up to 8.4 MGD has been authorized under this Order.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this Facility to surface waters.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of chapter 3 of CEQA, (commencing with section 21100) of division 13 of the Public Resources Code.

C. State and Federal Laws, Regulations, Policies, and Plans

1. **Water Quality Control Plans.** Requirements of this Order specifically implement the applicable Water Quality Control Plans.
 - a. **Basin Plan.** The Central Valley Water Board adopted a *Water Quality Control Plan, Fifth Edition* (Revised May 2018), for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, section II, does not specifically identify beneficial uses for Auburn Ravine Creek, but does identify present and potential uses for the Sacramento River from the Colusa Basin Drain to the I Street Bridge, to which Auburn Ravine Creek, via East Side Canal and Natomas Cross Canal, is tributary. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). Thus, beneficial uses applicable to Auburn Ravine Creek are as follows:

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Table F-4. Basin Plan Beneficial Uses

| Discharge Point | Receiving Water Name | Beneficial Use(s) |
|-----------------|----------------------|---|
| 001 | Auburn Ravine Creek | <u>Existing:</u> Municipal and domestic supply (MUN); agricultural supply for irrigation (AGR); water contact recreation, including canoeing and rafting (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); warm and cold migration of aquatic organisms (MIGR); warm and cold spawning, reproduction, and/or early development (SPWN); wildlife habitat (WILD); and navigation (NAV). |
| -- | Groundwater | <u>Potential:</u> Municipal and domestic water supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO). |

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.
3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, which became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 (*"Statement of Policy with Respect to Maintaining High Quality of Waters in California"*) (State Antidegradation Policy). The State Antidegradation Policy is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. The State Antidegradation Policy requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and the State Antidegradation Policy. The Central Valley Water Board finds this Order is consistent with the federal and State Water Board antidegradation regulations and policy.
5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued

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permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

6. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels (MCL's) designed to protect human health and ensure that water is safe for domestic use.
7. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.
8. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a) of the Water Code, requires that *"the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective"*.

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis (RPA) based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicates that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

9. **Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 C.F.R. parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Discharger has submitted a Notice of Intent (NOI) and been approved for coverage under the State Water Board Water Quality Order 2014-0057-DWQ, General Permit for Storm Water Discharges Associated with Industrial Activities (NPDES General Permit No. CAS000001). Therefore, this Order does not regulate storm water.

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D. Impaired Water Bodies on CWA 303(D) List

- Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments (WQLS's). The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 6 April 2018, U.S. EPA gave final approval to California's 2014 and 2016 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of WQLS's, which are defined as "...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 C.F.R. part 130, et seq.)." The Basin Plan also states, "Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLS's]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment." Neither Auburn Ravine Creek nor East Side Canal are listed as impaired on the 303(d) list of impaired water bodies. The listing for Natomas Cross Canal (Sutter County) includes mercury. The listing for the Sacramento River (Knights Landing to the Delta) includes chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, mercury, polychlorinated biphenyls (PCB's), and unknown toxicity.
- Total Maximum Daily Loads (TMDL's).** Table F-5, below, identifies the 303(d) listings and any applicable TMDL's. At the time of this permit renewal, there are no approved TMDL's with waste load allocations (WLA's) that apply to this Facility.

Table F-5. 303 (d) List for Natomas Cross Canal (Sutter County) and the Sacramento River (Knights Landing to the Delta)

| Pollutant | Potential Sources | TMDL Status |
|--|-------------------|-------------------|
| Natomas Cross Canal (Sutter County) | | |
| Mercury | Source Unknown | Under Development |
| Sacramento River (Knights Landing to the Delta) | | |
| Chlordane | Source Unknown | Under Development |
| DDT | Source Unknown | Under Development |
| Dieldrin | Source Unknown | Under Development |
| Mercury | Source Unknown | Under Development |
| PCB's | Source Unknown | Under Development |
| Unknown Toxicity | Source Unknown | Under Development |

- The 303(d) listings and TMDL's have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3 of this Fact Sheet.

E. Other Plans, Policies and Regulations

- Title 27.** The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq* (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

- a. The waste consists primarily of domestic sewage and treated effluent;
- b. The waste discharge requirements are consistent with water quality objectives; and
- c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., § 1311(b)(1)(C); 40 C.F.R. § 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 C.F.R. section 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that “*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.*” Federal regulations, 40 C.F.R. section 122.44(d)(1)(vi), further provide that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations (WQBEL's) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00 contains an implementation policy, “*Policy for Application of Water Quality Objectives,*” which specifies that the Central Valley Water Board “*will, on a case-by-case basis, adopt numerical limitations in Orders which will implement the narrative objectives.*” This Policy complies with 40 C.F.R. section 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) U.S. EPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's “*Policy for Application of Water Quality Objectives*”) (40 C.F.R. section 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: “*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*” (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents

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objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, “... *water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCL's)*” in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCL's. The narrative tastes and odors objective states: “*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*”

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a ROWD before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.
2. **Prohibition III.B (No bypasses of required treatment processes or overflow of untreated wastewater, except under the conditions at 40 C.F.R. section 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any required portion of the Facility. Federal regulations, 40 C.F.R. section 122.41(m), define “bypass” as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 C.F.R. section 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order WQO 2002-0015, which cites the federal regulations, 40 C.F.R. section 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.
3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance.
4. **Prohibition III.D (No inclusion of pollutant-free wastewater shall cause improper operation of the Facility's systems).** This prohibition is based on 40 C.F.R. section 122.41 et seq. that requires the proper design and operation of treatment facilities.
5. **Prohibition III.E (No discharge of hazardous waste).** This prohibition is based on CCR, Title 22, section 66261.1 et seq. that prohibits discharge of hazardous waste.
6. **Prohibition III.F (Average Dry Weather Flow).** This prohibition is based on the design average dry weather flow treatment capacity rating for the Facility. This prohibition ensures the Facility is operated within its treatment capacity and accounts for the permitted increase in the design average dry weather flow treatment capacity rating following Facility expansion and compliance with Special Provision VI.C.6.b of this Order. Previous Order R5-2014-0007 included average dry weather discharge flow limits at the Filter Clearwell Internal Waste Stream Compliance Point based on the Facility design flow. Flow is not a pollutant and, therefore, effluent limits for flow have been changed to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order.

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7. **Prohibition III.G (Maximum Hydraulic Capacity at Outfall).** This prohibition is based on the design maximum hydraulic capacity of the outfall at Discharge Point 001 (Monitoring Location EFF-001). Previous Order R5-2014-0007 included flow as an effluent limit at Discharge Point 001 based on the design capacity of the outfall. Flow is not a pollutant and therefore has been changed from an effluent limitation to a discharge prohibition in this Order, which is an equivalent level of regulation.

Order R5-2008-0156 included an average daily discharge flow limit of 12.2 MGD, which was retained in Order R5-2014-0007. In the ROWD submitted to the Central Valley Water Board on 17 July 2018, the Discharger provided documentation demonstrating that EFF-001 can discharge an average daily flow up to 25 MGD, which is based on the maximum hydraulic capacity of the outfall. This prohibition allows for discharges from the Facility up to a maximum flow of 25 MGD based on the current hydraulic capacity of the outfall at Discharge Point 001 (Monitoring Location EFF-001).

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. section 122.44 require that permits include conditions meeting applicable technology-based requirements, at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 C.F.R. part 133.

Regulations promulgated in 40 C.F.R. section 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTW's [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the U.S. EPA Administrator.

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 C.F.R. part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

- a. **BOD₅ and TSS.** Federal regulations at 40 C.F.R. part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD₅ and TSS. As described in section IV.C.3 of this Fact Sheet, this Order requires WQBEL's that are equal to or more stringent than the secondary technology-based treatment described in 40 C.F.R. part 133 (see section IV.C.3.b of the Fact Sheet for a discussion on pathogens, which includes WQBEL's for BOD₅ and TSS.)

Section 122.45(h) of 40 C.F.R. specifies that effluent limitations may be applied to internal waste streams when standards imposed at the point of discharge are impractical or infeasible. After the equivalent of full tertiary treatment, including

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filtration and UV disinfection, tertiary treated wastewater may be discharged to Auburn Ravine Creek at Discharge Point 001 or may be diverted from the filter clearwell to the tertiary storage basins until conditions in Auburn Ravine Creek are appropriate for disposal. The tertiary storage basins allow the Discharger 1) to store wastewater for recycled water uses, 2) to store final effluent during downstream flood events, or 3) to store effluent that does not meet the requirements of this Order (e.g., receiving water temperature limitations).

For the Facility's treatment process, the tertiary treatment standards required by the State Water Board, Division of Drinking Water (DDW) for BOD₅ and TSS are met prior to discharge to the tertiary storage basins. When the tertiary treated wastewater, which has already achieved compliance with DDW standards, is removed from the storage basins for discharge to Auburn Ravine Creek, the wastewater may no longer meet the tertiary definitions for BOD₅, TSS, and total coliform organisms; however, the DDW standards have been met and no longer require confirmation. Under the CWA, only secondary treatment is required for surface water discharge and the 30-day average BOD₅ and TSS limitations for secondary treatment are adequate. Therefore, it is not necessary to retreat the wastewater from the tertiary storage basins for BOD₅ and TSS removal to meet tertiary standards at Discharge Point 001. Due to the retention time in the tertiary storage basins, storage in the tertiary storage basins may result in growth of algae, regrowth of microorganisms, and re-suspensions of silts and sediments. Therefore, in order to meet the secondary effluent limitations, before the wastewater from the tertiary storage basins is discharged, it may be necessary to remove algae and particulates by re-routing the wastewater through the DAF units. The wastewater may also require an increase in dissolved oxygen by re-routing the wastewater through the re-aeration basin. Thus, this Order contains tertiary effluent limitations for BOD₅ and TSS before discharge to surface water or to the tertiary storage basins at the filter clearwell, with compliance measured at Monitoring Location INT-001 (see section IV.C.3.b of this Fact Sheet), and secondary effluent limitations for BOD₅ and TSS at Discharge Point 001, with compliance measured at Monitoring Location EFF-001.

Section 133.102 of 40 C.F.R., in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of BOD₅ and TSS over each calendar month, applicable at Discharge Point 001 (Monitoring Location EFF-001).

- b. **pH.** The secondary treatment regulations at 40 C.F.R. part 133 also require that pH be maintained between 6.0 and 9.0 standard units. This Order, however, requires more stringent WQBEL's for pH to comply with the Basin Plan's water quality objectives for pH.

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**Summary of Technology-Based Effluent Limitations
Discharge Point 001**

Table F-6. Summary of Technology-Based Effluent Limitations – Discharge Point 001

| Parameter | Units | Effluent Limitations | | | | |
|--|----------------|----------------------|----------------|---------------|-----------------------|-----------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum |
| Conventional Pollutants | | | | | | |
| Biochemical Oxygen Demand (5-day @ 20°C) | mg/L | 30 | 45 | -- | -- | -- |
| | % Removal | 85 | -- | -- | -- | -- |
| pH | standard units | -- | -- | -- | 6.0 ¹ | 9.0 ¹ |
| Total Suspended Solids | mg/L | 30 | 45 | -- | -- | -- |
| | % Removal | 85 | -- | -- | -- | -- |

¹ More stringent WQBEL's are applicable to the discharge and are included in this Order, as described further in section IV.C.3.b of this Fact Sheet.

C. Water Quality-Based Effluent Limitations (WQBEL's)

1. Scope and Authority

CWA section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as technology equivalence requirements, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in section IV.C.3 of this Fact Sheet.

Section 122.44(d)(1)(i) of 40 C.F.R. requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBEL's must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 C.F.R. section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBEL's when necessary is intended to protect the designated uses of the receiving water, as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

Finally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available WLA's developed and approved for the discharge.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters

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addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for MUN.

The Basin Plan on page II-1.00 states: *“Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...”* and with respect to disposal of wastewaters states that *“...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.”*

CWA section 101(a)(2) states: *“it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.”* Federal regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal regulations, 40 C.F.R. sections 131.2 and 131.10, require that all waters of the state be regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. 40 C.F.R. section 131.3(e) defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal regulation, 40 C.F.R. section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected, and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

- a. **Receiving Water and Beneficial Uses.** Refer to section III.C.1 above for a complete description of the receiving water and beneficial uses.
- b. **Effluent and Ambient Background Data.** The RPA, as described in section IV.C.3 of this Fact Sheet, was based on data collected since the completion of the Facility expansion project to accommodate regionalization with the Placer County SMD1 WWTP, from June 2016 through December 2017, which includes effluent and ambient background data submitted in SMR's. Ambient background data collected from January 2015 through December 2017 was also considered for the purposes of the RPA, since the upstream receiving water was not influenced by any change in the effluent characterization due to regionalization.
- c. **Assimilative Capacity/Mixing Zone.** The Central Valley Water Board finds, based on the available information, that Auburn Ravine Creek, absent the discharge from the Facility, is a low-flow/intermittent stream and may go subsurface during dry months. The ephemeral nature of Auburn Ravine Creek means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life.

The Discharger has not submitted flow data or a mixing zone/dilution study requesting dilution credits. Thus, consistent with the assumptions used for Order R5-2014-0007, the worst-case dilution for Auburn Ravine Creek is assumed to be zero to provide protection of the receiving water beneficial uses. The impact of assuming zero assimilative capacity within the receiving water is that discharge limitations are applied end-of-pipe, with no allowance for dilution within the receiving water.

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- d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc, which are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default U.S. EPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.
- e. **Hardness-Dependent CTR Metals Criteria.** The CTR and the NTR contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness, the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the hardness of the receiving water (actual ambient hardness) as required by the SIP¹ and the CTR.² The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones.³ Design flows for aquatic life criteria include the lowest 1-day flow with an average reoccurrence frequency of once in 10 years (1Q10) and the lowest average 7 consecutive day flow with an average reoccurrence frequency of once in 10 years (7Q10).⁴ This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a 3-year period, on average.⁵ The CTR requires that when mixing zones are allowed, the CTR criteria apply at the edge of the mixing zone; otherwise, the criteria apply throughout the water body including at the point of discharge.⁶ The CTR does not define the term “ambient,” as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully comply with the CTR and SIP.

i. **Summary Findings**

At design discharge conditions, Auburn Ravine Creek is effluent-dominated. Under these regularly occurring critical conditions, the effluent is the receiving water that is used to define the ambient receiving water conditions to define the appropriate water quality criteria in accordance with the CTR and SIP. Otherwise, if ambient downstream hardness was collected on the same day as effluent hardness, the downstream ambient hardness value is used. The Sacramento Superior Court has previously upheld the Central Valley Water Board’s use of effluent hardness levels in effluent-dominated streams when developing effluent limitations for hardness-dependent metals. (*California Sportsfishing Protection Alliance v. California Regional Water Quality Control Board, Central Valley Region*, Super. Ct. Sacramento County, 2012, No. 34-2009-80000309) (Order Denying Petitioners’ Motion to Strike

¹ The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

² The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used (40 C.F.R. § 131.38(c)(4)).

³ 40 C.F.R. §131.38(c)(4)(ii)

⁴ 40 C.F.R. §131.38(c)(2)(iii) Table 4

⁵ 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

⁶ 40 C.F.R. §131.38(c)(2)(i)

Respondent's Return of Writ of Mandate and Granting Discharge of the Writ). The ambient hardness for Auburn Ravine Creek is represented by the data in Figure F-1, below, which shows ambient hardness ranging from 22 mg/L to 110 mg/L based on applicable ambient data collected from January 2015 through December 2017. Given the high variability in ambient hardness values, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum). Because of this variability, staff has determined that based on the ambient hardness concentrations measured in the receiving water, the Central Valley Water Board has discretion to select ambient hardness values within the range of 22 mg/L (minimum) up to 110 mg/L (maximum). Staff recommends that the Central Valley Water Board use the ambient hardness values shown in Table F-7 for the following reasons.

- (a) The ambient receiving water hardness values shown in Table F-7 are consistent with design discharge conditions and will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.
- (b) The Water Code mandates that the Central Valley Water Board establish permit terms that will ensure the reasonable protection of beneficial uses. In this case, using the lowest measured ambient hardness to calculate effluent limitations is not required to protect beneficial uses. Calculating effluent limitations based on the lowest measured ambient hardness is not required by the CTR or SIP, and is not reasonable as it would result in overly conservative limits that will impart substantial costs to the Discharger and ratepayers without providing any additional protection of beneficial uses. In compliance with applicable state and federal regulatory requirements, after considering the entire range of ambient hardness values, Central Valley Water Board staff has used the ambient hardness values shown in Table F-7 to calculate the proposed effluent limitations for hardness-dependent metals. The proposed effluent limitations are protective of beneficial uses under all flow conditions.
- (c) Using an ambient hardness that is higher than the minimum observed ambient hardness will result in limits that may allow increased metals to be discharged to Auburn Ravine Creek, but such discharge is allowed under the State Antidegradation Policy (State Water Board Resolution 68-16). The Central Valley Water Board finds that this degradation is consistent with the Antidegradation Policy (see antidegradation findings in section IV.D.4 of the Fact Sheet). The State Antidegradation Policy requires the Discharger to meet WDR's that will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that: a) a pollution or nuisance will not occur, and b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.
- (d) Using the ambient hardness values shown in Table F-7 is consistent with the CTR and SIP's requirements for developing metals criteria.

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Table F-7. Summary of CTR Criteria for Hardness-dependent Metals

| CTR Metals | Ambient Hardness (mg/L) ² | CTR Criteria (µg/L, total recoverable) ¹ | |
|--------------|--------------------------------------|---|-----------------|
| | | Acute | Chronic |
| Copper | 60 | 55 ³ | 38 ³ |
| Chromium III | 60 | 1,100 | 140 |
| Cadmium | 54 (acute) 60 (chronic) | 2.3 | 1.6 |
| Lead | 54 | 37 | 1.5 |
| Nickel | 60 | 300 | 34 |
| Silver | 49 | 1.2 | -- |
| Zinc | 60 | 78 | 78 |

- ¹ Metal criteria rounded to two significant figures in accordance with the CTR (40 C.F.R. section 131.38(b)(2)).
- ² The ambient hardness values in this table represent actual observed receiving water hardness measurements from the dataset shown in Figure F-1.
- ³ CTR criteria for copper calculated using a site-specific WER of 6.34 in accordance with the *City of Lincoln Copper Water-Effect Ratio Study*, as discussed in section IV.C.2.f of this Fact Sheet.

ii. **Background**

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant (Davis Order) and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant (Yuba City Order). The State Water Board recognized that the SIP and the CTR do not discuss the manner in which hardness is to be ascertained, thus regional water boards have considerable discretion in determining ambient hardness so long as the selected value is protective of water quality criteria under the given flow conditions. (Davis Order, p. 10). The State Water Board explained that it is necessary that, “*The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions.*” (Yuba City Order, p. 8). The Davis Order also provides that, “*Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions.*” (Davis Order, p. 11)

The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:

$$\text{CTR Criterion} = \text{WER} \times (e^{m[\ln(H)]+b}) \text{ (Equation 1)}$$

Where:

H = ambient hardness (as CaCO₃)¹

WER = water-effect ratio

m, b = metal- and criterion-specific constants

The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for

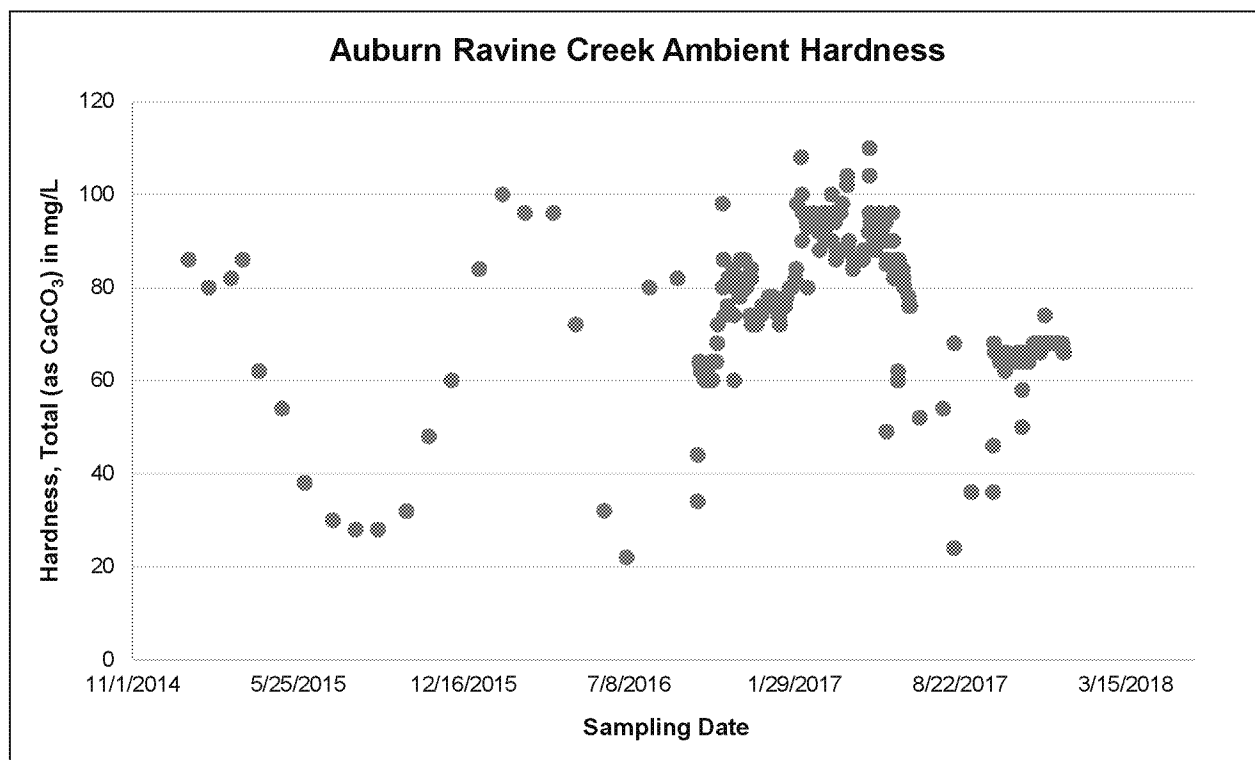
¹ For this discussion, all hardness values are expressed in mg/L as CaCO₃.

design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected “design” hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a 3-year period.¹ Design flows for aquatic life criteria include the 1Q10 and the 7Q10. Since Auburn Ravine Creek is considered an effluent-dominated water body, the critical design flow is zero.

iii. **Ambient Conditions**

The ambient receiving water hardness varied from 22 mg/L to 110 mg/L based on 212 samples from January 2015 through December 2017 (see Figure F-1).

Figure F-1. Observed Ambient Hardness Concentrations 22 mg/L – 110 mg/L



In this analysis, the entire range of ambient hardness concentrations shown in Figure F-1 were considered to determine the appropriate ambient hardness to calculate the CTR criteria and effluent limitations that are protective under all discharge conditions.

iv. **Approach to Derivation of Criteria**

As shown above, ambient hardness is variable. Because of the variation, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum, mid-point). While the hardness selected must be hardness of the ambient receiving water, selection of an ambient receiving water hardness that is too high would result in effluent limitations that do not protect beneficial uses. Also, the use of minimum

¹ 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

ambient hardness would result in criteria that may not be representative considering the wide range of ambient conditions.

Reasonable worst-case ambient conditions. To determine whether a selected ambient hardness value results in effluent limitations that are fully protective while complying with federal regulations and state policy, staff have conducted an analysis considering varying ambient hardness and flow conditions. To do this, the Central Valley Water Board has ensured that the receiving water hardness and criteria selected for effluent limitations are protective under “reasonable-worst case ambient conditions.” These conditions represent the receiving water conditions under which derived effluent limitations would ensure protection of beneficial uses under all ambient flow and hardness conditions.

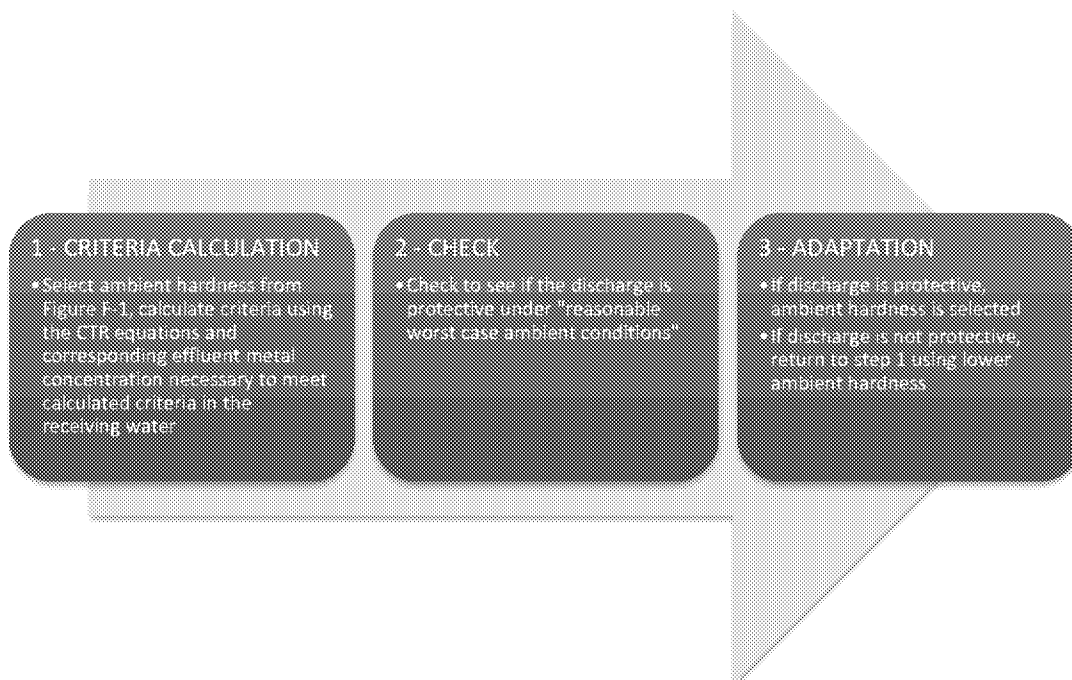
Reasonable worst-case ambient conditions:

- (a) “Low receiving water flow.” CTR design discharge conditions (1Q10 and 7Q10) have been selected to represent reasonable worst-case receiving water flow conditions.
- (b) “High receiving water flow (maximum receiving water flow).” This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.
- (c) “Low receiving water hardness.” The minimum receiving water hardness condition of 22 mg/L was selected to represent the reasonable worst-case receiving water hardness.
- (d) “Background ambient metal concentration at criteria.” This condition assumes that the metal concentration in the background receiving water is equal to CTR criteria (upstream of the Facility’s discharge). Based on data in the record, this is a design condition that does not regularly occur in the receiving water and is used in this analysis to ensure that limits are protective of beneficial uses even in the situation where there is no assimilative capacity.

Iterative approach. An iterative analysis has been used to select the ambient hardness to calculate the criteria that will result in effluent limitations that protect beneficial uses under all flow conditions.

The iterative approach is summarized in the following algorithm and described below in more detail.

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- (a) **CRITERIA CALCULATION.** CTR criteria are calculated using the CTR equations based on actual measured ambient hardness sample results, starting with the maximum observed ambient hardness of 110 mg/L. Effluent metal concentrations necessary to meet the above calculated CTR criteria in the receiving water are calculated in accordance with the SIP.¹ This should not be confused with an effluent limit. Rather, it is the Effluent Concentration Allowance (ECA), which is synonymous with the WLA defined by U.S. EPA as "*a definition of effluent water quality that is necessary to meet the water quality standards in the receiving water.*"² If effluent limits are found to be needed, the limits are calculated to enforce the ECA considering effluent variability and the probability basis of the limit.
- (b) **CHECK.** U.S. EPA's simple mass balance equation³ is used to evaluate if discharge at the computed ECA is protective. Resultant downstream metal concentrations are compared with downstream calculated CTR criteria under reasonable worst-case ambient conditions.
- (c) **ADAPT.** If step b results in:
- (1) Receiving water metal concentration that complies with CTR criteria under reasonable worst-case ambient conditions, then the hardness value is selected.
 - (2) Receiving water metal concentration greater than CTR criteria, then return to step a, selecting a lower ambient hardness value.

The CTR's hardness-dependent metals criteria equations contain metal-specific constants, so the criteria vary depending on the metal. Therefore,

¹ SIP section 1.4.B, Step 2, provides direction for calculating the Effluent Concentration Allowance.

² U.S. EPA Technical Support Document for Water Quality-based Toxics Control (TSD), pg. 96.

³ U.S. EPA NPDES Permit Writers' Handbook (EPA 833-K-10-001 September 2010, pg. 6-24)

steps a through c must be repeated separately for each metal until ambient hardness values are determined that will result in criteria and effluent limitations that comply with the CTR and protect beneficial uses for all metals.

v. **Results of Iterative Analysis**

The above iterative analysis for each CTR hardness-dependent metal results in the selected ambient hardness values shown in Table F-7, above. Using these hardness values to calculate criteria, which are actual ambient sample results, will result in effluent limitations that are protective under all ambient flow conditions. Nickel and silver are used as examples below to illustrate the results of the analysis. Tables F-8 and F-9, below, summarize the numeric results of the three-step iterative approach for nickel and silver. As shown in the example tables, ambient hardness values of 60 mg/L (nickel) and 49 mg/L (silver) are used in the CTR equations to derive criteria and effluent limitations. Then under the “check” step, worst-case ambient receiving water conditions are used to test whether the discharge results in compliance with CTR criteria and protection of beneficial uses.

The results of the above analysis, summarized in the tables below, show that the ambient hardness values selected using the three-step iterative process results in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-8 and F-9 summarize the critical flow conditions. However, the analysis evaluated all flow conditions to ensure compliance with the CTR criteria at all times.

Table F-8. Verification of CTR Compliance for Nickel

| Receiving water hardness used to compute effluent limitations | | | | 60 mg/L |
|--|---|---------------------|--|-----------------------------|
| Effluent Concentration Allowance (ECA) for Nickel ¹ | | | | 34 µg/L |
| | Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions | | | Complies with CTR Criteria? |
| | Hardness | CTR Criteria (µg/L) | Ambient Copper Concentration ² (µg/L) | |
| 1Q10 | 60 | 34 | 34 | Yes |
| 7Q10 | 60 | 34 | 34 | Yes |
| Max receiving water flow | 22 | 15 | 14 | Yes |

¹ The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There is no effluent limitation for nickel as it demonstrates no reasonable potential.

² This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

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Table F-9. Verification of CTR Compliance for Silver

| Receiving water hardness used to compute effluent limitations | | | | 49 mg/L |
|--|---|---------------------|--|-----------------------------|
| Effluent Concentration Allowance (ECA) for Silver ¹ | | | | 1.2 µg/L |
| | Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions | | | Complies with CTR Criteria? |
| | Hardness | CTR Criteria (µg/L) | Ambient Silver Concentration ² (µg/L) | |
| 1Q10 | 60 | 1.7 | 1.2 | Yes |
| 7Q10 | 60 | 1.7 | 1.2 | Yes |
| Max receiving water flow | 22 | 0.30 | 0.30 | Yes |

¹ The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There is no effluent limitation for silver as it demonstrates no reasonable potential.

² This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

f. Copper Water Effects Ratio (WER)

The Discharger submitted a June 2011 *City of Lincoln Copper Water-Effect Ratio Study* (WER Study), which followed U.S. EPA's 2001 *Streamlined Water-Effect Ratio Procedure for Discharges of Copper* (EPA 822 R-01-005) (Streamlined WER Procedure). Following the Streamlined WER Procedure, the Discharger performed two sampling events in June and December 2010 to assess ambient conditions and calculate a freshwater copper WER using the primary test species, *Ceriodaphnia dubia*. With no allowance for dilution within the receiving water, the Discharger's WER Study was developed using 100 percent effluent. The Discharger concluded that a dissolved WER for copper of 6.34, using effluent data to represent low flow, zero-dilution discharge conditions, is applicable to the discharge to Auburn Ravine Creek. The Central Valley Water Board reviewed the WER Study and concluded that the site-specific WER of 6.34 was applicable to the discharge to Auburn Ravine Creek in Order R5-2014-0007. This Order continues to apply the WER based on the June 2011 WER Study.

Following completion of the regionalization project with the Placer County SMD1 WWTP, the character of the Facility's effluent has changed. The new inflow from Placer County SMD1 WWTP constitutes up to 18.6 percent of the total inflow to the Facility. In addition to hardness, there are several other water quality characteristics, including total organic carbon, TSS, and total dissolved solids, that may impact metals toxicity. U.S. EPA's *Interim Guidance on Determination and Use of Water-Effect Ratios for Metals* (1994) recommends that NPDES permits include a "condition for periodic testing of WER to verify site-specific criterion." Because the character of the effluent has changed since the WER Study was conducted, this Order requires the Discharger to conduct a WER verification study to verify that the dissolved WER for copper of 6.34 remains applicable to current effluent characteristics following completion of regionalization with the Placer County SMD1 WWTP.

3. Determining the Need for WQBEL's

Clean Water Act section 301(b)(1)(C) requires effluent limitations necessary to meet water quality standards, and 40 C.F.R. section 122.44(d) requires NPDES permits to include conditions that are necessary to achieve water quality standards established

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under section 303 of the CWA, including state narrative criteria for water quality. Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) state, “*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*” Additionally, 40 C.F.R. section 122(d)(1)(vii) requires effluent limits to be developed consistent with any available WLA’s developed and approved for the discharge. The process to determine whether a WQBEL is required as described in 40 C.F.R. section 122.44(d)(1)(i) is referred to as an RPA. Central Valley Water Board staff conducted RPA’s for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. This section includes details of the RPA’s for constituents of concern for the Facility. The entire RPA is included in the administrative record and a summary of the constituents of concern is provided in Attachment G. For priority pollutants, the SIP dictates the procedures for conducting the RPA. For non-priority pollutants the Central Valley Water Board is not restricted to one particular RPA method; therefore, the RPA’s have been conducted based on U.S. EPA guidance considering multiple lines of evidence and the site-specific conditions of the discharge.

- a. **Constituents with No Reasonable Potential.** WQBEL’s are not included in this Order for constituents that do not demonstrate reasonable potential to cause or contribute to an in-stream excursion of an applicable water quality objective; however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. This section only provides the rationale for the RPA’s for the following constituents of concern that were found to have no reasonable potential after assessment of the data:

i. **Salinity**

- (a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCL’s, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The U.S. EPA NAWQC for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no U.S. EPA numeric water quality criteria for the protection of agricultural, livestock, and industrial uses. Numeric values for the protection of these uses are typically based on site-specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The Central Valley Water Board is currently implementing the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort, the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to

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establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

Table F-10. Salinity Water Quality Criteria/Objectives

| Parameter | Agricultural WQ Objective ¹ | Secondary MCL ² | U.S. EPA NAWQC | Effluent | |
|---|--|--|-----------------------|----------------------|------------------|
| | | | | Average ³ | Max |
| Chloride (mg/L) | Varies | 250, 500, 600 | 860 1-hr 230 4-day | 46 | 72 |
| Electrical Conductivity (µmhos/cm) or Total Dissolved Solids (mg/L) | Varies | 900, 1,600, 2,200 or 500, 1,000, 1,500 | N/A | 395 or 234 | 510 or 305 |
| Sulfate (mg/L) | Varies | 250, 500, 600 | N/A | 28 | 34 |

¹ Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, chapter IV, section 8 of the Basin Plan. However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

² The Secondary MCL's are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.

³ Maximum calendar annual average.

- (1) **Chloride.** The Secondary MCL for chloride is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The NAWQC acute criterion for the protection of freshwater aquatic life for chloride is 860 mg/L and the chronic criterion is 230 mg/L.
- (2) **Electrical Conductivity or Total Dissolved Solids.** The Secondary MCL for electrical conductivity is 900 µmhos/cm as a recommended level, 1,600 µmhos/cm as an upper level, and 2,200 µmhos/cm as a short-term maximum, or when expressed as total dissolved solids is 500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum.
- (3) **Sulfate.** The Secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(b) RPA Results

- (1) **Chloride.** Chloride concentrations in the effluent ranged from 24 mg/L to 72 mg/L, with a maximum annual average of 46 mg/L, based on four samples collected between June 2016 and December 2017. The maximum annual average does not exceed the Secondary MCL recommended level and the maximum effluent chloride concentration of 72 mg/L does not exceed the NAWQC for the protection of freshwater aquatic life. The maximum observed

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receiving water chloride concentration was 12 mg/L based on four samples collected between January 2015 and December 2017.

- (2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger' monitoring reports shows a maximum observed annual average electrical conductivity of 395 µmhos/cm, with a range from 322 µmhos/cm to 510 µmhos/cm. These levels do not exceed the Secondary MCL recommended level. The maximum observed receiving water electrical conductivity was 259 µmhos/cm based on 162 samples collected between January 2015 and December 2017.

Total dissolved solids concentrations in the effluent ranged from 190 mg/L to 305 mg/L, with a maximum annual average of 234 mg/L, based on 16 samples collected between June 2016 and December 2017. These levels do not exceed the Secondary MCL recommended level. The maximum observed receiving water total dissolved solids concentration was 150 mg/L based on four samples collected between January 2015 and December 2017.

- (3) **Sulfate.** Sulfate concentrations in the effluent ranged from 25 mg/L to 34 mg/L, with a maximum annual average of 28 mg/L, based on four samples collected between June 2016 and December 2017. These levels do not exceed the Secondary MCL recommended level. The maximum observed receiving water sulfate concentration was 14 mg/L based on four samples collected between January 2015 and December 2017.

Based on the relatively low levels of salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above applicable water quality objectives. However, since the Discharger discharges to Auburn Ravine Creek, a tributary of the Sacramento River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Allowing the Discharger to increase its current salt loading may be contrary to the Region-wide effort to address salinity in the Central Valley. Therefore, in order to ensure the Discharger will continue to control the discharge of salinity, this Order requires the Discharger to continue to implement a salinity evaluation and minimization plan. Also, water supply monitoring is required to evaluate the relative contribution of salinity from the source water to the effluent.

- b. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, antimony, BOD₅, mercury, nitrate plus nitrite, pH, total coliform organisms, and TSS. WQBEL's for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

- (a) **WQO.** The 1999 U.S. EPA NAWQC for the protection of freshwater aquatic life for total ammonia (the "1999 Criteria"), recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature.

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U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC.

U.S. EPA recently published national recommended water quality criteria for the protection of aquatic life from the toxic effects of ammonia in freshwater (the “2013 Criteria”).¹ The 2013 Criteria is an update to U.S. EPA’s 1999 Criteria and varies based on pH and temperature. Although the 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including new toxicity data on sensitive freshwater mussels in the Family Unionidae, the species tested for development of the 2013 Criteria may not be present in some Central Valley waterways. The 2013 Criteria document therefore states that, “*unionid mussel species are not prevalent in some waters, such as the arid west...*” and provides that, “*In the case of ammonia, where a state demonstrates that mussels are not present on a site-specific basis, the recalculation procedure may be used to remove the mussel species from the national criteria data set to better represent the species present at the site.*”

The Central Valley Water Board issued a 3 April 2014 *California Water Code Section 13267 Order for Information: 2013 Final Ammonia Criteria for Protection of Freshwater Aquatic Life* (13267 Order) requiring the Discharger to either participate in an individual or group study to determine the presence of mussels or submit a method of compliance for complying with effluent limitations calculated assuming mussels present using the 2013 Criteria. The Discharger is not participating in the Central Valley Clean Water Association (CVCWA) Freshwater Collaborative Mussel Study. Therefore, the Discharger was required to complete an individual study or submit a method of compliance for complying with effluent limitations calculated assuming mussels present using the 2013 Criteria. In April 2015, the Discharger submitted a report titled “Literature Review Regarding the Current and/or Historic Distribution of Freshwater Mussels Relative to the City of Lincoln Wastewater Treatment and Reclamation Facility.” The report concluded that there are no records of freshwater mussels in the Auburn Ravine Watershed. However, due to the presence of host fish in the watershed and suitable habitat conditions, mussels could potentially be present at or downstream of the WWTRF outfall in Auburn Ravine. The potential presence of mussels downstream of the WWTRF cannot be ruled out.

Studies are currently underway to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria can be implemented in the Central Valley Region as part of a Basin Planning effort to adopt nutrient and ammonia objectives. Until the Basin Planning process is completed, the Central Valley Water Board will continue to implement the 1999 Criteria to interpret the Basin Plan’s narrative toxicity objective. The 1999 Criteria recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day

¹ Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, published August 2013 [EPA 822-R-13-001]

average concentration should exceed 2.5 times the 30-day CCC. U.S. EPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because Auburn Ravine Creek has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

A chronic criterion was calculated for each day when paired pH and temperature data were measured using downstream receiving water data for pH and temperature. Rolling 30-day average criteria were calculated from downstream receiving water data using the criteria calculated for each day and the minimum observed 30-day average criterion was established as the applicable 30-day average chronic criterion, or 30-day CCC. The most stringent 30-day CCC was 2.72 mg/L (as N). The 4-day average concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 2.72 mg/L (as N), the 4-day average concentration that should not be exceeded is 6.81 mg/L (as N).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that are harmful to aquatic life and exceed the Basin Plan narrative toxicity objective. Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, *“Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.”* For priority pollutants, the SIP dictates the procedures for conducting the RPA. Ammonia is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, *“State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL’s are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL’s for pathogens in all permits for POTW’s*

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